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AUTHOR Magisos, Joel H.; And Others
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ABSTRACT

This collection comprises five papers that were prepared in response to the recent series of national reports criticizing American secondary education. In "A General Overview," Joel H. Magisos uses previous analyses and syntheses of the recommendations contained in the group of national studies to draw implications for vocational education. Rosemary F. Kolke, in her paper entitled "Implications for Secondary Vocational Curricula," discusses vocational education in terms of its being a vehicle for the integration and application of basic skills, including technological literacy and career development. Some guiding principles and possible directions for providing vocational education for students with special needs are explored by L. Allen Phelps in his paper entitled "Implications for Special Population Students." In a paper entitled "Implications for Non-occupationally Specific Vocational Education," Michael J. Dyrenfurth addresses such issues as redefining vocational education, encouraging educational advocacy, interpreting technology, increasing interaction with mathematics and science professionals, encouraging inservice education, increasing rigor and expectations, and upgrading teacher education. Dora B. Johnson, in her paper "Implications for Learning and Instruction," focuses on learning styles, instructional content, the teaching process, and collaborative work experience. (MN)

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American Vocational Association

Secondary Vocational Education and the National Studies

A monograph prepared by the Subcommittee on Secondary Vocational Education of the American Vocational Association Board of Directors

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Joel H. Magisos, Chairman
Rosemary F. Kolde
L. Allen Phelps
Michael J. Dyrenfurth
Dora B. Johnson

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SECONDARY VOCATIONAL EDUCATION AND THE NATIONAL STUDIES

A monograph prepared by
the Subcommittee on Secondary Vocational Education
of the
American Vocational Association
Board of Directors

Joel H. Magisos, Chairman

Rosemary F. Kolde
L. Allen Phelps
Michael J. Dyrenfurth
Dora B. Johnson

October 1984

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Preface

The following papers were prepared by a special Subcommittee on Secondary Vocational Education of the American Vocational Association Board of Directors. The members of the Subcommittee are:

Joel H. Magisos, chairman; associate director and professor at the National Center for Research in Vocational Education, The Ohio State University; AVA vice president for New and Related Services.

Rosemary F. Kolde, associate superintendent of the Great Oaks Joint Vocational School District in Cincinnati, Ohio; president-elect of the American Vocational Association.

L. Allen Phelps, associate professor and director of the Office of Career Development for Special Populations at the University of Illinois, Champaign; AVA vice president for Special Needs.

Michael J. Dyrenfurth, associate professor of industrial education at the University of Missouri-Columbia; former AVA vice president for Industrial Arts.

Dora B. Johnson, health occupations teacher educator at the University of Northern Colorado in Greeley; AVA vice president for Health Occupations.

These papers were written in response to a recent series of national reports critical of American secondary education. They represent the views of their authors and do not necessarily reflect the official policies of the American Vocational Association. The studies referred to in the following papers are:

Adler, Mortimer J. The Paideia Proposal: An Educational Manifesto. New York: MacMillan Publishing Co., Inc., 1982.

Boyer, E.L. High School: A Report on Secondary Education in America. New York: Harper and Row Publishers, Inc., 1983.

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SECONDARY VOCATIONAL EDUCATION AND THE NATIONAL STUDIES

Implications for Secondary Vocational Education

A General Overview

by Joel H. Magisos

INTRODUCTION

Secondary education is again at the center of public controversy, this time under close scrutiny by several national study commissions calling for reform. It's by no means the first time that high school reform has been proposed. As recently as 1973, the National Commission on the Reform of Secondary Education presented recommendations to the public and profession for improvement of high schools. It proposed new national goals, revitalization of the content, and alternatives to traditional secondary education. The latest reports are different. They propose revitalization of the content, but with more traditional, not alternative, measures.

The cynical observer might be inclined to say that the pendulum had merely taken another swing and that this, too, shall pass. However, the present reform movement has some other characteristics:

- Several prestigious groups have made independent recommendations, all with a sense of urgency
- The principal motivation is the nation's economic well-being
- The public has become aroused, and
- Political leaders have become interested and involved.

Whether this interest will be sustained over time remains to be seen, but some of the groups have made commitments to continue study or to follow up with action on their own recommendations.

Many in education regard this public attention as a window of opportunity through which some of the problems can be seen and solved. Nearly as many analyses of the national studies are underway as there are study reports, each analysis searching for implications from a specific perspective, just as this paper searches for the implications for vocational education.

SECONDARY VOCATIONAL EDUCATION

Vocational education has had a significant and often controversial role in secondary education. In one sense, it was focused upon public secondary education in 1917 with the Smith-Hughes Act, and was repeatedly reaffirmed with subsequent federal legislation. In another sense, it has become the exemplar of federal-state and state-local cooperation in meeting individual

and societal needs through educational programs. According to the National Center for Educational Statistics, over 60 percent of vocational education enrollment in 1978-79 (over 10 million students) was at the secondary level. However, less than 40 percent of the occupationally specific enrollment was at the secondary level.[1]

Secondary vocational education has had its advocates and its critics. Among the advocates, Gordon Swanson asserts that:

> . . . vocational education at the secondary level, particularly as provided in a comprehensive format, has been an enormously successful enterprise. . . . it has given diversity, vitality, and opportunity to millions of young people. It has fanned sparks of enthusiasm, sharpened perceptions of goals, raised levels of consciousness and responded to local initiatives.[2]

In his analysis of American Vocational Association hearings on vocational education in the comprehensive high school, Henry David says that vocational education provides an alternative course of study for those not intending to go to college. It also contributes to more equal opportunities, and provides students with the knowledge and skills needed to take and hold entry-level jobs.[3] Regarding the effects of vocational education, Donna Mertens and John A. Gardner report that a survey of adults aged 20 to 34 finds evidence that high school vocational education may lead to higher weekly earnings over the first 15 years following graduation; that graduates use their vocational training on their jobs; and that they are well satisfied with their high school curriculum.[4]

On the other side, David reports that there are five categories of criticism of vocational education: 1) inadequate collaboration between secondary and postsecondary education, 2) lack of coordination between modes of providing occupational education and training, 3) failure in providing for all special needs students, 4) inability to be responsive, and 5) lack of integration between general and academic curriculum. Among the critics, E. Gareth Hoachlander states that "vocational education in America is a diverse enterprise that at once reflects the very best and the very worst of education in the nation's public schools."[5]

Charles Benson asserts that the attributes of quality vocational programs are: 1) comprehensiveness and depth of instruction, 2) closeness to industry, and 3) flexibility of response to the local labor market. Using examples of program changes, staffing, and costs for special needs populations, Benson illustrates that secondary programs were less responsive to needs than postsecondary programs.[6] In a Fortune article, Gilbert Sewell makes this point:

> . . . vocational education has merit when solid grounding in language and math is a prelude to hands-on training. Most employers want literate, reliable workers who come to work ready to profit from rapid on-the-job training. . . . The high schools should stick to the job of giving firm foundations in academic subjects, expecting more from all students, not tracking slow or reluctant pupils prematurely into job training courses.[7]

PURPOSE OF THIS PAPER

It is not the purpose of this paper to reanalyze the several national studies of education. This has been ably done by several groups, including the American Vocational Association.[8] Instead, an effort will be made to use previous analyses and syntheses of the study recommendations to draw implications for vocational education. In spite of the rash of interpretive materials being issued by national education organizations, it may take a couple of years before all the reports have been issued, analyzed, and a comprehensive study of the reports completed. Unfortunately, by then much of the action will already have taken place. There is some urgency for vocational educators to get on top of the issues before some actions adversely affect secondary vocational education and the opportunity for improvement slips away.

THE NATIONAL STUDIES OF EDUCATION

A Nation at Risk, the report of the National Commission on Excellence in Education, captured the nation's attention with its provocative language about ". . . a rising tide of mediocrity" and our having ". . . been committing an act of unthinkable, unilateral educational disarmament." The President, in accepting the report, used the occasion to restate some of his own goals for education even though they were not necessarily supported by the report.

Others have not been so impressed with the report; in fact, the director of the Center for Education Research and Development at the University of Maryland has called the report ". . . a scandalous piece of research" that has condemned education in the U.S. without sufficient evidence.[9] Each of the national study reports will be interpreted differently and quoted selectively as different groups endeavor to gain advantage for their own point of view. The fact that the reports have generated such interest in education is their most remarkable attribute.

It is tempting to focus on the controversial, negative, provocative, or missing features of these reports. For example, vocational education receives scant attention in the studies, even though the studies focus on secondary education where vocational education is concentrated and on economic development where vocational education should have impact. Harold Howe asks: "Does this omission imply that all is well with vocational education and that it should keep on doing what it has been doing? Or does it perhaps suggest that there just isn't much interest in vocational education because it is not seen as very significant?"[10] Few vocational educators would claim the first to be true or be satisfied if the second were true. An attack on the treatment of vocational education in the reports would accomplish little but focus attention on passive or negative perceptions. Now, while the public is interested, is the time to assert the positive aspects of vocational education and to capitalize on the constructive recommendations in the reports.

RECOMMENDATIONS OF THE STUDIES

Three analyses, selected from among many, are summarized here to synthesize the major recommendations of the national studies. While this should be useful, it is important to read these and other analyses in their original form. Of particular interest to vocational educators, the November 1983 issue of Update features critiques of several of the studies with particular emphasis upon implications for vocational education. It is also recommended that the original reports be read, especially A Nation at Risk, Action for Excellence, and Education for Tomorrow's Jobs.

While study of individual reports and analyses of these reports is an important professional responsibility, it is even more important to try to understand their total impact and the implications for vocational education. It is already evident, for example, that state and local boards of education are raising high school graduation requirements and that colleges and universities are raising admission standards. It also is becoming evident that vocational education enrollments are dropping as students attempt to meet the higher high school graduation and college admissions requirements. J. Lynn Griesemer and Cornelius Butler point out that certain precepts about American education underlie all or most of the recommendations in the reports:

- Education is correlated with economic and social development
- Quality education as a lifelong process is a universal right
- Public schools will continue as a mainstay of our society
- Quality teachers and teaching underlie improved learning
- Accountability and leadership by all must increase.[11]

Howe's arbitrary list of ten major recommendations of the reports includes:

- Achieving greater consensus on goals
- Focusing on a common core of learning
- Stiffening subject-matter and skills requirements
- Emphasizing teachers of more ability
- Renewing focus on basic skills, higher order skills, homework, and more time in school
- Finding ways to meet short term, critical teacher shortages
- Emphasizing the principal's role, restructuring the school and enlisting help from others

- Defining a strong federal role
- Seeking partnerships with business and higher education
- Emphasizing a balance between quality and quantity.

Howe sees the unattended issues as:

- Costs of improving education
- Narrow focus on the high school and on cognitive elements of education
- Unfinished equity agenda
- Neglect of vocational education
- Tendency to cheapen educational goals (as opposed to economic, materialistic motives).

While most of the reports were silent on vocational education in their recommendations, some of the reports either explicity or implicity reflected perceptions of vocational education. A Place Called School, by John Goodlad saw general, not specific, vocational education as an important part of the secondary school curriculum, but criticized vocational education for not keeping pace with new technology and not being rigorous enough. A Nation at Risk recognized the demand for skilled workers and mentioned vocational education as an important elective. High School, the report from the Carnegie Foundation by Ernest L. Boyer, recognized that many believe vocational education holds students in high school. Nevertheless, he was disappointed in its placement record and criticized it for its poor linkage to job opportunity, characterizing it as often irrelevant or inadequate. While emphasizing the need for a training workforce, the Task Force on Education for Economic Growth (Action for Excellence) failed to mention vocational education even though the sponsoring Education Commission of the States favors secondary vocational education.

The National Science Board Commission (Educating Americans for the 21st Century) made no comment about vocational education's contribution to technological literacy, which it favors. But it was against specific job skills training at the high school level. The Committee on Vocational Education and Economic Development in Depressed Areas (Education for Tomorrow's Jobs) has been characterized as vocational education's excellence report even though its focus was fairly narrow. Of course, it did lend strong support to vocational education as a solution to the youth unemployment problem.

Mortimer Adler (The Paideia Proposal) included preparation in basic skills for future careers as an objective, but was adamantly opposed to skill training in any form. The Twentieth Century Fund (Making the Grade) did not speak to vocational education, but Peterson's accompanying background paper is a balanced treatment of policy development in vocational education.

IMPLICATIONS OF THE RECOMMENDATIONS FOR VOCATIONAL EDUCATION

Most vocational educators can accept the precepts underlying many of the national studies. Vocational education is founded on the premise that education — particularly vocational education — is linked to economic and social development. The development of secondary, postsecondary, and adult programs signifies belief that vocational education should be a lifelong process. Attention to standards, especially in earlier stages of vocational education's development, showed concern for quality. While proprietary vocational schools abound and some leaders advocate shifting job training to private employers, vocational educators have been steadfast in promoting a strong public school vocational education program. Support of teacher education programs and rigorous certification standards, especially in occupational skills, have been supported over the years. The need for increased accountability and leadership has been recognized, in fact demanded, by federal legislation. State plans, accountability reports, state supervision, inspection, and review have been a part of the program for years.

Vocational educators do have trouble with some of the national study orientations, both explicit and implicit. For example, the use of a one-track, classical curriculum and standard methods for all students as advocated in the Paideia Proposal would clash with most vocational educators' orientation. Attempts to over balance the secondary school program in any one direction, as in Educating Americans for the 21st Century, would also be very troublesome. Any orientation that ignores individual differences in goals, abilities, and backgrounds could not be supported.

Regardless of reservations about certain orientations — and opposition to recommendations that might unbalance the secondary school program — vocational educators could support most of the major recommendations emerging from the group of national study reports. Because the reports and recommendations are so numerous, Howe's synthesis of major recommendations will be used as an organizer for examining the implications for vocational education.

GOALS

The national study reports will result in new, clearer goals of education at national, state, and local levels. There is always risk that vocational education will be adversely affected in any revision of educational goals. This could be by omission, curtailment, or even over-promising of results.

Conversely, any revision also provides an opportunity for clarifying and improving vocational education in the secondary school. It is essential that vocational education leaders at every level assert their position whenever educational goals are under discussion or consideration. This assertive leadership cannot be merely rhetorical but must be clear, persuasive, and backed up with factual information.

COMMON CORE OF LEARNING

There is strong support for a common core of learning in the secondary school curriculum, with heavy emphasis upon basic academic skills and higher-order

learning competencies. The so-called "new basics," however, smack of more of the same in the name of excellence. And more of the same does not necessarily mean better.

Most vocational educators would strongly support curricula that better prepare students for participation in vocational education and for a more meaningful life. Furthermore, vocational educators would incorporate preparation or remediation in basic skills into secondary vocational education programs as part of a general effort to improve the common core of learning. A principal concern, however, is that the common core would become so large that essential electives like vocational education might be squeezed out of the secondary school. There is evidence that this may already be happening. To counter this, some vocational education leaders are proposing that certain vocational courses be offered as substitutes for graduation requirements (e.g., vocational agriculture for biological sciences, drafting for mathematics, etc.). The danger, of course, is that the vocational course might fail to meet its vocational objective because of its new orientation.

STIFFENED REQUIREMENTS

A monolithic curriculum — one danger of efforts to enlarge the common core of learning — might result in one of two unfortunate results: much higher dropout rates or a gradual lowering of standards to prevent drop-outs. Either result would not be desirable — elite schools for elite clientele or a "nothing" curriculum that meets no one's needs. Stiffened requirements for high school graduation, college admission, grades, attendance, and discipline would be supported by most vocational educators provided that appropriate standards were applied, adequate alternative programs were available, and sufficient support was available for students with special needs. It would be incumbent upon vocational educators to raise standards in vocational courses, something that is clearly needed in many instances today.

MORE ABLE TEACHERS

Anything that can be said about the plight of teachers in general can also be said about vocational teachers. If anything, the alternative employment opportunities for vocational teachers are clearer and more available. On the other hand, vocational teachers whose occupational skills are out of date cannot perform well and their inadequacy is very apparent and damaging. If they are tenured and their occupational skills are no longer relevant, they become a barrier to needed program change.

More flexibility in teacher recruitment, selection, preparation, and pay is needed to attract top flight teachers. Flexibility is needed, too, in certification requirements so that new teachers can be brought in from business and industry, exchanges of personnel can be arranged, and teachers can be cycled back to modern jobs for updating of occupational skills. Redesign or refinement of preservice and inservice training of vocational teachers may be in order.

RENEWED FOCUS

Renewed focus on basic skills, higher order skills, homework, and more time in schools, as mentioned before, would be supported by vocational educators, provided that it didn't put some students at a disadvantage. Vocational education courses can be the vehicle for basic and higher order skills. Supervised practice, home projects, and cooperative work experience have been used in the past to increase the intensity of student experience.

SHORT-TERM, CRITICAL TEACHER SHORTAGES

Teacher shortages in critical occupational areas are as acute as anywhere in education. More flexibility in pay and certification, exchange of teachers and private sector employees, and cooperative work experience programs are ways to overcome this problem. Focus on the problem in mathematics and science may have positive implications for vocational education because precedents set in other fields may carry over.

PRINCIPAL'S ROLE, RESTRUCTURING THE SCHOOL

All educational personnel are plagued by the school bureaucracy and lack of building-level educational leadership. Any improvement in this situation would be welcomed and supported by vocational educators. It would be desirable to include an understanding of vocational education as a requirement of preservice and inservice training for principals. Further, it would be desirable to develop alternative scheduling plans to better accommodate vocational courses. Help from others in the community has been a long-standing practice of vocational educators, who could offer assistance to other educators in using this resource.

STRONG FEDERAL ROLE

Some of the reports advocate a strong federal role for education while others shy from it or even disdain it. The federal-state cooperation under vocational education legislation has worked well and could serve as a model for other educational programs. Surely, vocational educators support a continuing, strong federal role in vocational education, but would want the same safeguards (e.g., state administration, local option, etc.) for other education programs. Vocational educators could not support a single federal program of education any more than they could support a monolithic local curriculum.

PARTNERSHIPS WITH BUSINESS AND HIGHER EDUCATION

The national study reports also advocate partnerships with business, industry, and labor. Vocational education, although needing to improve in this respect, has been establishing and maintaining such relationships for years through advisory councils, cooperative work experience programs, and placement and follow up of students on jobs. Cautions have been raised about accepting such partnerships uncritically, but vocational education has much to contribute

to other educators on the process and desired outcomes. In fact, vocational education should take the leadership in developing education-business partnerships. Vocational education will need to give increasing attention to articulating its programs with those offered in postsecondary institutions. Special emphasis must be given to keeping vocational education students' options for higher education open whenever possible.[12]

BALANCE BETWEEN QUALITY AND EQUALITY

Most of the national study reports have their own definition of quality and have given lip service to equality. Few face up to the issues raised 20 years ago by John W. Gardner in his little book, Excellence: Can We Be Equal and Excellent, Too? He set the stand[illegible]ith this quote:

> It is possible to have excellence in education and at the same time to seek to educate everyone to the limit of [illegible] ability. A society such as ours has no choice but to seek the devel[illegible]nt of human potentialities at all levels. It takes more than an educated elite to run a complex, technological society. Every modern, industrialized society is learning that hard lesson.[13]

Vocational educators should adopt and promote this ideal by seeking excellence in every course, no matter how simple or complex, for every student. By providing equitable access to every student and by adopting a theme of excellence, vocational educati[illegible] can play a major role in achieving excellence in education and, ultimately, for individuals and society.

SUMMARY

Calls for reform of secondary education are backed by the concrete recommendations of influential study groups. These recommendations are under serious consideration by legislative bodies, political leaders, educators, and others. Although the focus of the recommendations has not been on vocational education, secondary vocational education will be profoundly affected by action to carry out the recommendations. While secondary vocational education has its critics, it has demonstrated positive results for large numbers of students and has strong support.

The national studies of education recommend clearer goals, a common core of learning, stiffened requirements, more able teachers, more intensive learning, meeting critical shortages of teachers, improved management, a strong federal role, partnerships, and balance between quality and equity. Vocational educators could support the spirit of the major recommendations of the studies provided that the needs of all students are met, that secondary school offerings include opportunities for vocational education, and that excellence is balanced with equity.

Vocational educators must adopt a mentality for excellence that extends to every course and every student. They must seek to understand the implications for vocational education of every recommendation under serious consideration.

Furthermore, they must assert their own position wherever and whenever policy is being formulated so that vocational education plays a prominent and appropriate role in secondary schools.

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SECONDARY VOCATIONAL EDUCATION AND THE NATIONAL STUDIES

Implications for Secondary Vocational Curricula

by Rosemary F. Kolde

INTRODUCTION

Education in the United States has recently been the focus of numerous, well-publicized national studies and reports. Their recommendations for change are abundant and varied, of paramount importance to the future of secondary vocational education.

Most of these studies concentrate on secondary education and propose a one-track educational system to prepare students for postsecondary education. They all address in some manner—either directly or by omission —the role of vocational education in the secondary setting. There is an underlying assumption that the high school curriculum would benefit by the elimination of vocational education at the secondary level.

SECONDARY VOCATIONAL EDUCATION

In the early 1900's, high schools provided the same college preparatory curriculum for all students. Variance in student needs was not considered. Secondary vocational education evolved in 1917 from the Smith-Hughes Act, a response to an educational curriculum that did not prepare students for successfully entering and remaining in the world of work.

Secondary vocational education is designed to develop total productive citizens who are able to meet the entry-level job needs of the labor force while acquiring basic skills for life-long education. It is not job-specific training; it does not teach specific tasks for specific entry-level positions. Rather, vocational education teaches a variety of skills that can apply to a broad occupational range, skills that will not restrict individuals to one particular job for the rest of their lives. It enables the student to develop and refine the concepts of fundamental work ethics which will further permit that individual to function effectively, efficiently and productively in a diversity of employment opportunities.

Vocational education, which began as a reform movement, has since become an important component of the nation's total educational program. With the public's attention currently focused on education, now is an opportune time to ensure that vocational education remains an integral segment of the secondary education curriculum.

RECOMMENDATIONS AND POSSIBLE SOLUTIONS

The studies contain many recommendations that have value for secondary vocational education. The thrust for quality and education excellence is certainly one that vocational educators endorse. This concept should apply to all curriculum areas including vocational education.

STRENGTHENED CURRICULUM

Action for Excellence — the report prepared by the Education Commission of the States — calls for a school curriculum strengthened in both substance and motivational power. More enthusiastic involvement of students in the learning process, greater mastery of skills beyond the basics, more rigorous practice in analysis, interpretation and persuasive writing are all components of the strengthened curriculum.

Educating Americans or the 21st Century also indicates that the basic skills needed by all students are not only reading, writing and arithmetic, but also communications, higher problem-solving skills, and scientific and technological literacy.

Secondary vocational education programs are ideal vehicles in which to learn computational, problem-solving and communication skills as well as scientific and technological literacy. A solid foundation in the basics is essential not only in the acquisition of occupational skills but for advancement after employment. The public must be provided with a clearer concept of the inter-relatedness of vocational and academic education.

In High School, E.L. Boyer reports that many vocational courses:

> . . . are enriching and useful. They provide excellent options for a wide range of students and should be strengthened, not diminished. What we would eliminate are discriminatory labels and a tracking pattern that cut off their future options. We should also eliminate the narrow "marketable" skills courses that have little intellectual substance, courses that give students "hands-on" experience while denying them a decent education.

The point of a strengthened curriculum, including substance and motivation, is an excellent one. Vocational educators, as well as educators at all levels, need to set higher standards, reevaluate teaching methods and laboratory activities, and develop a more extensive evaluation process. Curriculum may need to be reexamined for content and sequence, desired results and teaching methods.

Additional emphasis on the basics mandates that they be integrated with the vocational curriculum. Skills required in the basics should first be isolated from the existing vocational curriculum so that objectives and competency statements can be prepared. Sequencing of the basics can follow the sequencing of the vocational curriculum, thus reinforcing both academic and vocational learning. Vocational students, as well as general education students, need extensive courses in math, science and communications. The vocational students need to be able to understand and apply basic principles to the whole occupational area.

Development of innovative vocational education programs to assist in the acquisition of the basics would not only improve our own programs but also

the quality of education in general. The "2+2" program — consisting of two years in the high school followed by an additional two years of advanced post-secondary technical education — is one example of such a program.

Broad-based occupational preparation for students in vocational education programs is an area that vocational educators must continue to explore and expand. Goodlad suggests in A Place Called School that vocational courses may offer job preparation that is too narrow to accommodate rapid changes in technology. As the vocational curriculum is reexamined, attention should be given to the transferability of skills to other employment areas within an occupational field.

Boyer, in High School, also recommends stronger formal partnerships between secondary schools and postsecondary technical institutions and community colleges. Their exemplary occupational education programs could strengthen secondary vocational education efforts immeasurably. The report also encourages partnerships between the schools and business and industry, a recommendation echoed in A Nation At Risk, Action for Excellence, Education for Tomorrow's Jobs and Educating Americans for the 21st Century.

Educating Americans for the 21st Century indicates that in discussions with a variety of groups including the education, business and government communities very few endorsed an emphasis on special job-related skills.

It is apparent that many of the authors of the educational excellence reports know very little about the purpose of vocational education and the value of such programs to the individual and to the economic development of the community. These studies have uncovered an obvious need for vocational educators to increase their communication with national leaders, organizations, business and industry.

TEACHERS

Most vocational educators should agree with the reports' suggestions about teachers' need for improved teacher pre-service and in-service training. Time-release programs for teachers to acquire technological updates and current industry experience are being examined and implemented across the country. The proliferation of new technology requires close observation of these programs and consideration of other innovative approaches that enable teachers to keep pace.

Education for Tomorrow's Jobs suggests that individual teachers be rewarded for excellence and that the education system permit that reward to be based on differentiation by occupational field. Such a differentiation would strengthen the ability of vocational education to recruit teachers with needed expertise in new technology occupational areas as well as rewarding teachers who have demonstrated excellence in keeping up in their areas of expertise.

Education for Tomorrow's Jobs also recommends the use of part-time teachers employed in the private sector. These individuals would not only bring new methods and technology with them to the classroom but could also be used to strengthen the vocational program. Competency-based vocational curriculum, designed on a modular basis, could be taught by selected part-time instructors based on their areas of expertise.

The Hunt report, Action for Excellence, also suggests that more flexibility in state certification rules for teachers would encourage qualified persons from business, industry, and technical communities to serve public schools. It would also provide a means of meeting various critical teacher shortages.

IMPLICATIONS FOR VOCATIONAL EDUCATION

The reports and studies often overlook the primary recipient of their concerns - the student. Although academic excellence as a continuous process is a laudable goal, its pursuit should not be at the expense of the learner.

The public must be informed about the importance of vocational education in a comprehensive high school curriculum. Action for Excellence indicates that the challenge of educational reform is to raise the minimum and maximum achievement levels of students and to do a better job of reaching underserved students. Will a classical curriculum, without diversity and choice, accomplish this objective? It would, instead, increase the number of underserved students as well as the number of students who leave high school without meeting graduation requirements, ill-prepared for the world of work.

Secondary vocational education attracts and responds to all types of students, who perceive vocational education as a positive contribution to their lives. It serves students with different learning styles and capabilities and it provides a means of addressing the needs of special populations. Recent Gallup polls report that the American people see a strong need for vocational education in the high school.

Academic excellence can be achieved without a one-track educational system. Students should have the opportunity to choose from alternative curricula that have program quality and student achievement as primary objectives. They should be prepared upon graduation to pursue several avenues with postsecondary education as only one of several options.

Many students do not enter postsecondary education immediately upon graduation and need some preparation for the workplace. Sixty percent of those students who do continue their education enter occupational programs in community colleges. Secondary vocational education graduates often use the skills learned in their high school program to earn their way through college.

Certainly vocational educators have much to learn from the recommendations of the various reports and studies. An increased emphasis on basics, a curriculum more rigorous in both substance and motivational power, the mastery of skills beyond the basics and greater student achievement are all elements that should be identified with quality vocational education. Broad-based occupational preparation with the ready transferability of skills in numerous and varied employment opportunities within an occupational area should already be in place. Partnership with postsecondary technical institutions, business, industry and labor are essential if quality vocational education programs are to be provided both at the secondary level and for life-long learning. A Nation At Risk clearly identified the issue when it reported: "educators, business and labor, and other interested parties should clearly identify the skills that the schools are expected to impart to students for effective employment and citizenship."

But there is much to fear in some of these recommendations for improving the secondary educational system. A longer school day or year will not automatically provide quality education. Neither a one-track nor a classical curriculum for all will ensure a quality program. It is more likely to encourage increased numbers of youth to leave the educational environment without the preparation they need to become contributing and productive citizens. In 1982, Mertens, Seitz and Cox studied the dropout patterns of over 7,000 individuals, 16 years of age or older. They found that those students who were exposed to vocational education — and not previously alienated by school — had a better retention record. Vocational educators should be aware that increasing high school graduation requirements leaves less time to accommodate electives and vocational education.

SUMMARY

Secondary vocational education is not a training program but education that prepares students to set the direction of their own lives and careers. It is also an excellent vehicle for the integration and application of basic skills, including technological literacy and career development. A quality vocational curriculum is a blend of skills necessary for both student achievement and successful employment. It is assuredly the individualized education that Goodlad praises in A Place Called School - education that requires increased involvement on the part of both teacher and learner.

The recommendations of these reports must be seriously considered as they directly relate to quality vocational education programs. It is imperative that vocational educators unanimously support the thrust for excellence in education. They must provide the initiative in refining ideas, testing exemplary programs, and shaping the curricular reforms that must occur in the secondary school. They must take a leadership role in designing courses, programs and policies.

In selectively using and rejecting various recommendations of the reports, vocational educators will lead the way to educational excellence with vocational education as an integral part of the educational system of tomorrow.

SECONDARY VOCATIONAL EDUCATION AND THE NATIONAL STUDIES

Implications for Special Population Students

by L. Allen Phelps

Within the past two years there have been no less than fifteen major studies and reports calling for major reforms in the nation's schools. Others are still in progress. The majority of these studies, such as A Nation at Risk issued by Secretary Bell's Commission on Excellence in Education, have focused on secondary education and the high school in particular. They call for major reforms in curriculum, standards, length of the school day or year, teaching and teacher preparation, leadership, funding and other areas.

The magnitude and complexity of what has been proposed in these studies provides both a challenge and an opportunity for all educators, especially vocational educators. The challenge is to examine the underlying assumptions, as well as the appropriateness and validity of the studies' findings as they pertain to vocational education and special education.

Most of the studies are generally silent on the secondary school's mission and responsibility to serve special student populations such as the disadvantaged, handicapped, school dropouts, and the limited English proficient. Many of the studies also fail to address the role of vocational education in high schools. There even appears to be an implicit assumption that perhaps high schools would not only survive, but actually prosper without vocational education—at least in its present form.

This paper will address a series of key questions related to vocational education's role in serving special population students. Who are special population students, why do they need vocational education, and what are the benefits to society, employers, and individuals? What has been the mission and role of vocational education in serving these students and what do the studies say about the effectiveness of its efforts to date? What principles should guide our efforts to improve secondary vocational education? What new directions and improvements warrant consideration and adoption?

Since the mid-1960's we have witnessed a steadily increasing diversity of students in our nation's high schools. In response to litigation and federal equal educational opportunity legislation, students with economic, academic, and cultural disadvantages, minorities, handicapped youth, and other underserved populations have entered the educational mainstream. The Civil Rights Act of 1964, the 1954 Brown vs. Board of Education decision and the Elementary and Secondary Education Act of 1965 were the precursors of this movement and clearly established the school's responsibility to provide equal education opportunities to all students regardless of race, national origin, sex, or handicapping condition. Removing inequities and increasing opportunities for all students to participate in the full range of educational programs have become major thrusts of both elementary and secondary schools.

Vocational education at the secondary level is viewed by special population students and their advocates as an important equalizer — not only of educational opportunities, but of employment opportunities as well. For many special needs students entering high school, the employment outlook is bleak because they lack important basic skills in such areas as communication, reading, and mathematics. If their vocational education is successful, they learn both essential basic and pre-employment skills as well as specific job skills that enable them to break the chain of poverty, unemployment, academic failure, and personal frustration they've experienced since childhood.

Since the mid-1960's, the enrollment of disadvantaged, handicapped, and limited-English proficient students in secondary vocational education programs has increased steadily. Table 1 illustrates the growth both in the number of special needs students served and the percentage of special needs students participating in the total vocational education program. While we have witnessed a 35 percent growth in vocational education enrollments since 1972, the 79 percent growth in enrollment of special needs youth over the same nine-year period has been even more dramatic.

The data presented in Table 1 represent enrollment in both secondary and post-secondary programs, and cannot be broken out by level in the early years. However, the 1980-81 enrollment data show that approximately 64 percent of the special needs enrollments are at the secondary level, representing some 2.1 million students. If one compares these data with high school special or compensatory education enrollments it appears that a large percentage of special population students participate in some form of general or occupationally specific vocational education program. However, this is not to suggest that all of these students have been served or that their vocational education is adequate or appropriate to their educational needs.

Each June approximately 1,100,000 youths in this nation don't graduate from high school with their peers. The high school completion rate for 18-19 years old reached 74 percent in the mid-1960s and has remained static ever since. While more of these students are completing their high school education at a later date through GED and adult education programs, the dropout rates from blacks and other minority youth remain at an unacceptably high level of 30-32 percent.

Also, the passage of Title IX in the early 1970s challenged vocational education to assure that students interested in nontraditional occupations and careers have a full and equal opportunity to pursue them.

Another way to look at the need for serving special populations is from the social cost-benefit perspective. The long-term costs to society of not providing effective vocational education for special needs youth are monumental. The annual costs for institutionalization, incarceration, unemployment compensation, and other social welfare subsidies can easily reach $15,000 per person for individuals with severe limitations and capabilities. In addition to the costs of dependency borne by taxpayers, the revenues lost in federal, state, and local taxes because an individual isn't working must also be considered.

Clearly, the costs of not providing vocational education to youth with special needs are staggering in both their economic and human dimensions. Vocational educators need to inform the general public and policymakers about their role

Table 1: Special Needs Student Enrollment in Vocational Education: 1973-1983

	1972-73		1975-76		1980-81	
	N	%	N	%	N	%
Total Vocational Education Enrollment	12,068,893	100	15,107,290	100	16,293,084	100
Disadvantaged	1,581,025	13.1	1,873,304	12.4	2,524,893	15.5
Handicapped	222,713	1.9	284,231	1.9	543,213	3.3
Limited English Proficient	N/A		N/A		159,637	1.0

in providing individualized, appropriate, and meaningful education that enhances special-needs students' opportunities for successful transition from school to work or continuing education.

THE MISSION AND OUTCOMES

In 1914 the Commission on National Aid to Vocational Education noted:

> The social and educational need for vocational training is equally urgent. Widespread vocational training will democratize the education of the country . . . by recognizing different tastes and abilities and by giving equal opportunities to all to prepare for their life work.[1]

Since this early expression of federal interest in vocational education, the major mission of federal involvement has been to promote equality of opportunity for all people to secure useful and marketable job preparation. The Declaration of Purpose in the 1976 Vocational Education Amendments emphasizes the need to provide persons of all ages — including those who have discontinued their education and those with special educational handicaps —with:

> . . . vocational training and retraining which is of high quality, which is realistic in the light of actual or anticipated opportunities for gainful employment, and which is suited to their needs, interests, and ability to benefit from such training.[2]

How does this broad mission relate specifically to vocational education for secondary level special needs youth? Moss described secondary vocational education as having three major goals: (1) it serves as an appropriate and useful educational experience for a substantial number of high school students, (2) it provides a vehicle through which several ends of general education can best be achieved, and (3) it develops job skills which result in higher productivity and economic benefits.[3]

Participation in vocational programs is an excellent vehicle for enabling students to develop and strengthen their basic reading, math, communication, science, and reasoning skills. For special needs students in particular, vocational instruction provides meaningful and concrete opportunities to relate abstract principles to real processes associated with the world outside of school. Without such applied learning opportunities it is doubtful that many special population students would remain in school. In this sense, the goals and outcomes of vocational education and general education should be mutually reinforcing.

Well-planned vocational programs also provide students with valuable opportunities to explore the changes occurring in the workplace, and the relationship of business and industry to other aspects of their lives. Students can also explore the impact of technology on occupations and families, along with issues such as sexism in the workplace, ecological concerns, dual career families, consumer economics, and managing one's career development.

In many states data show that 75 to 80 percent of the graduating high school seniors enroll in one or more vocational classes during their four years of school. Campbell, Orth, and Seitz examined the transcripts of 3,054 high school graduates, 17 to 21 years of age, and found that 78 percent had taken at least one course. Of these students approximately half had taken less than 3 credits, and the other half had a concentrated participation of more than 3 credits. While comparable data are not available to examine the vocational education enrollment patterns of special population students at the high school level, the 1980-81 Vocational Education Data System report does reveal that approximately 35 percent of both special population students and regular students were enrolled in occupationally-specific advanced programs. Thus, it appears likely that regular and special population students follow the same pattern of using vocational classes for both exploratory and in-depth skill development purposes.[4]

Data describing the economic effects of secondary vocational education programs upon special population students are generally only available piecemeal. Since these students are difficult to track once they leave school and because many of their handicaps are hidden, there are no systematic data available to compare their earnings, employment, or postsecondary education participation rates with other groups. The available few studies suggest that special needs students who have participated in a series of vocational education courses do have rates of employment comparable to other vocational education completers.

Another critical aspect of secondary vocational education is its capacity for preventing or minimizing high school dropouts. When Mertens, Seitz, and Cox studied the dropout patterns of 7,415 individuals who were 16 years of age or older in 1980, they found that increased exposure to vocational courses was helpful in retaining those students who had not been highly alienated by their school experiences prior to reaching age 16.[5]

GUIDING PRINCIPLES

As one examines the findings and recommendations of the studies, at least two certainties appear on the horizon for secondary vocational education. First, there is a critical need to study more closely the goals and outcomes of vocational education and to educate the public with the findings. The contrasting findings from the various studies suggest that the perceived purposes and goals of vocational education at the secondary level are highly diverse, ranging from supporting general education to providing specific job skills. It is imperative that vocational educators and communities build a clearer consensus on how vocational education relates to secondary education. Within each state and community the general public will need to participate in and be informed of this process.

Second, like the high school itself, vocational education is bound to undergo some dramatic changes in the years ahead. If nothing else happens, enrollment declines will signify major changes in the breadth of curriculum. Here again, vocational educators need to be leaders in formulating the curricular and other educational reforms that take place over the next decade in the secondary schools.

It is imperative that concerns for the growing special student population be considered in these discussions and that the subsequent reforms be responsive to the individual needs of students who encounter education difficulties. The following principles should guide the process and direction of action to improve secondary education:

1. Any set of education goals and aims for secondary education must include an assurance that all students will have access to meaningful and individually appropriate vocational education. The assurances of equal educational opportunity must not be abridged or foreshortened since they have vital impact on the social consciousness of the entire nation.

2. Standards for achieving excellence in secondary education must recognize the full range of individual differences in learners; evaluation of both programs and student achievement must be flexible enough to allow for these differences.

3. Curricular changes must recognize that specialized education and support services (basic skills instruction), vocational instruction, and the world of work are all interdependent. Research on the education of special population students has continually found that achievement is correlated with functional, practical, and applied learning experiences.

SOME POSSIBLE DIRECTIONS

The course of action for secondary vocational education in the next decade will necessarily focus on the related goals of economic and human resource development. To be effective, vocational education must focus on objectives and programs that improve the productivity of America's workforce, and increase the career development options for the nation's youth and adults — including those with special educational needs.

Many of the recommendations found in the studies deserve serious consideration. Those outlined below have been proposed elsewhere, but generally these other proposals have failed to include specific implications for serving special population students.

1. Secondary vocational education teachers need better preparation, more pay, and incentives for outstanding performance. Both preservice and inservice vocational teacher education programs need to better prepare teachers to deal effectively with a broad range of special population students and equity issues in the workplace. Incentives for performance and salary increases should

reward teachers who are particularly effective with special needs learners and are capable of helping these students make the transition to competitive employment.

2. Greater collaboration between secondary vocational education and the private sector should include attention to special population students. Local program advisory committees must represent the interests of special needs students and employers who hire minority or handicapped youth. Plans for program development and revision should include collaboration with local service delivery agents for the Job Training Partnership Act and Private Industry Councils.

   Adopt-a-teacher and industry internship programs should be created to allow teachers and guidance counselors first-hand experience in the basic skill and occupational requirements of business and industry.

3. New partnerships should be established with local vocational rehabilitation agencies, employment service offices, councils for the aging, and other organizations that serve special populations. Vocational educators should be encouraged to take active community service roles in these agencies and organizations. Such efforts are an important aspect of enhancing the general public's knowledge of secondary vocational education.

4. As performance standards are examined and strengthened for secondary vocational education students, it will be important to lengthen the school day or extend the school year for special population students. Special summer programs or supplemental instruction periods for disadvantaged and other special students will be essential to allow adequate time for students to attain full proficiency.

5. An individualized program planning process should be established for all special population students, providing appropriate assessment, guidance, and instruction leading toward realistic career options. Individualized plans help differentiate vocational instruction and assessment standards based on the abilities, aptitudes, and interests of the student. They are helpful in overcoming the notion that every student must achieve every competency in a vocational program in order to be successful. Such plans also serve to coordinate vocational instruction (both classroom and on-the-job instruction) with supportive basic skills instruction, pre-vocational services, job placement, and transitional services.

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SECONDARY VOCATIONAL EDUCATION AND THE NATIONAL STUDIES

Implications for Non-occupationally Specific Vocational Education

by Michael J. Dyrenfurth

The intent of this paper is to examine both the statements and the implications of what selected national reports have said about the practice of non-occupationally specific vocational education programs. How do these reports reflect the present and future of vocational education? How do the various report authors and teams suggest we do a better job?

WHAT IS VOCATIONAL EDUCATION?

Vocational education is an entire continuum of programs ranging from the most general career and technology orientations through to the most job specific post-secondary training programs. Encompassed by this definition are systematic career development programs, explorations of technology (such as industrial arts and home economics), and of course the core of job entry, upgrading and retraining programs. Vocational education also includes the vitally necessary services that buttress the practice of the profession: guidance and counseling, special needs programs, placement services, curriculum development, research and pre- and in- service teacher, specialist and administrator education. The programs and services encompassed by this continuum may be arbitrarily classified as either being occupationally specific or non-specific.

Although such a programmatic view of all vocational education may be useful in beginning a definition, it is hardly sufficient. One needs to have a sense of the objectives for which the programs and services are implemented. Traditionally, this comprehensive slate of vocational education programs has served to:

- Provide training for job entry by developing skills, knowledge and attitudes directly useful for gaining employment.
- Upgrade people by developing skills, knowledge and attitudes necessary to make effective use of new and emerging technologies and/or to advance on the job.
- Retrain people faced by technological or economic obsolescence.
- Contribute to meaningful occupational choice by developing an awareness of, and by subsequently providing an opportunity for the exploration of career (occupational) and technological clusters.

When considering the tremendous richness and diversity of the practice of vocational education, this broad definition is necessary. It is the only one able to claim nationwide validity because it encompasses the entire range of practice. Unfortunately, this comprehensiveness has not been understood by many of the economists, social scientists, university presidents, journalists, politicians, and chief executive officers who have commented on the effectiveness of education in recent times. However, the responsibility for such misunderstanding is not solely theirs.

A FOCUS ON NON-OCCUPATIONALLY SPECIFIC VOCATIONAL EDUCATION

With respect to the occupationally specific/non-specific components of vocational education, the discussion that follows focuses on the latter because of the importance such early experiences have in shaping attitudes. Similarly, these experiences also contribute significantly to career awareness and exploration. This fosters careful career decision-making which in turn enhances the likelihood of subsequent success in occupationally specific vocational education.

Some type of production or service industry employs most of the graduates from the nation's school systems. Business and industrial trainers from these sectors often claim to be in the best position to provide these graduates with job-specific knowledge and skills. But this is not the case when the objective is to develop understanding of work, technology, industry, and work-related attitudes. Employers generally hope that the nation's schools will provide them with graduates who already have achieved this understanding. Furthermore, industry wants students who are willing to learn, to get along with others, and understand industry and technological needs.

Although non-occupationally specific goals of vocational education focus on many of these desires, our field unfortunately affords them less attention than it should. The career development, orientation, exploration, and attitudinal contributions of our programs are less occupationally specific than entry training goals. They are often considered peripheral to "true vocational education" by people who do not subscribe to a broad concept of vocational education.

Such a difference in perspective is important when receiving the recommendations of the national reports. Not one of the reviewed reports has called for extensive in-school, job-specific training. Is this because of the author's limited understanding of vocational education or because they felt there was no role for such programs?

WHICH NATIONAL REPORTS AND METHODS?

In addressing the substantive core of this analysis, the discussion was purposefully restricted to the seven major reports listed in the preface. Hearing testimony and content analysis was the primary vehicle for reaching conclusions in these reports, and a similar approach was used by this author. Such analysis yielded the following list of selected recommendations and implications that all deal with the non-occupationally specific training sector of vocational education. As seen by the reports and the profession, the goals of non-occupationally specific vocational education involve:

- Developing occupational decision-making skills in career awareness and exploration and thereby increasing the career options of students.
- Developing technological literacy.

- Providing a relevant and hands-on setting for the application and reinforcement of basic skills such as language, mathematics and science.
- Contributing to the motivation of students to take better advantage of present, and to pursue further, educational opportunities.
- Developing constructive work habits.
- Learning basic skills such as the use of language, mathematics and science, through an entirely different instructional mode from that used by traditional subjects.
- Encouraging job creation, entrepreneurial activity and other thrusts towards enhancing our nation's productivity.
- Developing consumer knowledge and skills.
- Enhancing the avocational possibilities of work.
- Developing fundamental intellectual abilities such as critical thinking and problem solving.
- Building a sense of community, service, citizenship, and individual responsibility for the nation's welfare.

REDEFINING VOCATIONAL EDUCATION

The most pervasive comments typically found in these reports addressed the very concept of what vocational education is . . . or should be. It was obvious that many considered vocational education to be job-specific training. This perception is an unpleasant fact of life that should be dispelled. It leads policy setters and decision makers to erroneous conclusions about our profession — conclusions that haunt us when they get translated into accountability mechanisms because they often force the use of inappropriate criteria (e.g. placement rate) upon non-occupationally specific programs. Certainly the vocational education profession must recognize that the notion of vocational education as a broad continuum of programs that extends on either side of initial occupational preparation, is not universally recognized or accepted. Furthermore, vocational education's leaders must be aware that there are members of their profession who think that federal funds should be restricted to only occupationally specific programs.

Nevertheless, when the reports did discuss vocational education, they generally advanced a non-occupationally specific role for vocational education in the secondary schools. This is in sharp contrast to the view held by our profession's traditionalists.

But the reports also manifested a problem for everyone involved with vocational education. Action for Excellence, for example, failed to mention of any significant role for vocational education. Given the report's subtitle — "A comprehensive plan to improve our nation's schools," and the fact of its issuance

by a group called the Task Force on Education for Economic Growth —such an omission is serious. The implications are clear. We must mount a concerted drive to ensure that public officials understand what vocational education is and why it exists. To achieve such levels of understanding, both the AVA and the state vocational associations must move this objective nearer the top of their agendas; it will take much money and even more effort to succeed in this drive.

ENCOURAGING EDUCATIONAL ADVOCACY

Similarly, individuals and education associations of all kinds will need to expand their sphere of contacts drastically. They need to be heard and seen by school boards, administrators, supervisors, state departments, university presidents, and the private sector. Furthermore, in addition to being seen and heard, they must also evidence understanding of the forces that impinge on the people addressed—we cannot afford to be labeled as a parochial interest group afflicted with tunnel vision. If education as a whole is to reach new levels of excellence, it will be with vocational educators working together with their colleagues from other educational disciplines and practices. We will not achieve excellence by seceding from the educational community.

INTERPRETING TECHNOLOGY

A recognition of the impact of technology on the world of today and tomorrow characterizes some of the reports. Action for Excellence, for example, points out technological demands on workers and their preparation, particularly as they affect our nation's competitive position among the world's economies. Educating Americans for the 21st Century and High School also speak cogently to this point. They call for systematic incorporation of technology education into our schools, even to the extent of including technology in the minimum high school graduation requirements. The vocational education profession could easily use its cluster-based industrial arts, home economics, and practical arts laboratories to help achieve society's expectations for technological literacy.

To accomplish this efficiently, however, the profession must develop and explain a coherent rationale and curriculum to address this goal. Decision-makers and the public will not be convinced by a mere change of course titles; we will have to deliver broad-based technological understandings. Vocational education must develop hands-on laboratory-based learning activities that demonstrate basic technological processes and the scientific principles behind them. We must implement instructional strategies that maximize our students' ability to transfer these understandings to new situations, not merely in a "book learning" sense, but also in an applied sense. And we must develop standardized instruments to measure such technological literacy.

Finally, vocational educators will have to develop a degree of discipline that will enable most of us to address similar goals. No more will the rugged individualism so often exhibited behind the doors of our shops and laboratories suffice. Tailoring programs to meet local and individual needs will have to be continued, but this is not license for us to ignore our ties to a common set

of goals and national imperatives. Therefore, one major implication of these reports is that we will have to be prepared to forfeit a degree of our individual freedom for the good of the whole.

Should our mathematics and science colleagues be successful in establishing the mathematics, science and technology councils recommended by the National Science Foundation report, the vocational education profession must be ready to participate. Given the almost total omission of the study of technology in traditional mathematics and science courses, we represent the only practitioners able to address the topic in concrete terms. With just a little investment in equipment, we will have the facilities to demonstrate technology applications. We need to make our interest in technology known. The AVA and its affiliated groups must establish extensive linkages with the NSF and a joint AVA/NSTA professional development program would seem to be well advised.

INCREASED INTERACTION WITH MATHEMETICS AND SCIENCE PROFESSIONALS

Another implication of Educating Americans for the 21st Century (and of a hearing of the National Commission on Excellence in Education) is that vocational education must establish its ability to work with mathematics and science education. Increasingly, "math, science, and technology" are being used as one construct; math and science education treat technology as a stepchild—something to be tolerated, but not addressed as mainstream activity. This provides our profession with a genuine opportunity. We can become the major application arena for technology education.

How could vocational education address this challenge? By increasing the rigor of its "related knowledge" courses. By infusing more obvious treatment of the scientific principles that underly technology into our demonstrations and lessons. By involving mathematics and science instructors in preparing for and reinforcing key lessons. By working with such instructors to provide them with practical examples of the application of their content in our courses to reinforce their instruction. By joining with mathemetics and science professionals to organize technology resource centers. The possibilities in this arena are endless.

ENCOURAGING IN-SERVICE EDUCATION

Vocational educators responding to the National Science Board Commission's call for technology education for all will need to rethink their activities and offerings. The composition of our student body will change, and we will need to be able to deal with an increased range of student talent. Furthermore, our content base will change and all vocational educators will become increasingly involved in delivering technological literacy. Therefore, we will not be able to retreat to the comfort of current knowledge and skills. We will need to become more tolerant of the unknown. Technological depth will gradually have to give way to a greatly expanded breadth, and an examination of interrelationships. Vocational educators will need to implement personalized professional development plans to include new technological arenas and capabilities in their portfolios and to keep abreast of emerging technology in their existing specialty.

To achieve this, vocational education will need to mount a more vocal call for enhanced mechanisms of inservice staff development and preservice training.

Participation in such opportunities should be made a contractual responsibility if necessary. If we are serious about vocational education's drive for excellence, we will need to exchange some of our comfort and security for mandatory professional development. Similarly, administrative agencies and teacher organizations must be prepared to modify teacher certification, salary scales, and tenure regulations to reflect professional achievement. This was suggested most visibly by the National Commission on Excellence in Education and the Committee on Vocational Education.

INCREASED RIGOR AND EXPECTATIONS

Increased rigor is another demand common to many reports, and as professionals we must be honest with ourselves and others. Are we simply settling for less from our students than we know we ought to? Perhaps we are just tired from overwork, disillusioned from years of neglect, frustrated by professionally demeaning practices and policies, and angered over low salaries that conflict with our sense of worth.

But, despite such factors, the question remains: are we insisting on a quantity and quality of performance that is commensurate with each individual's capability and with the program's goals? Furthermore, are these goals industry-derived and relevant to the technology it uses? The evidence and the reports—at least according to Action for Excellence, A Nation at Risk, and High School—suggest not. Now it is up to us to do something about it! Fortunately, the level of rigor is easily within our control. First, vocational teachers need to agree to raise their expectations of their students. Then they must collectively implement the higher standards. It seems appropriate to inform students of this move and to involve industry-based advisory committees in developing and communicating these higher levels of expectations.

Another route to increased rigor is to increase the "work" time for both teachers and students as deemed desirable by many studies; most notably A Nation at Risk and Action for Excellence. Both reports address time on task and raise questions of efficiency and effectiveness. Alternatives such as longer days and extended school years are frequently mentioned. Vocational educators need to seize the opportunity to describe what can be done on a year-round basis. We have at least one successful model already. Vocational agriculture instructors have been using it for years. We must insist on extended contracts for our teachers. The demands of laboratory maintenance, industrial contact, and technological updating simply overrun the time available in the traditional school year. Nor is it cost-effective to operate expensive labs for only one "shift" per day. Even two shifts, considering night school, are only minimally effective. The "year-round" three-shift school would seem an appropriate solution that would also provide opportunity for customized, industry-specific vocational education.

UPGRADING TEACHER EDUCATION

Increased teacher certification requirements, competency testing, and higher admissions cut-off scores are among the reports' suggestions for teacher education. The increased use of part-time teachers from business, industry, and labor was highlighted in Education for Tomorrow's Jobs, but this seems contrary to the general trend that calls for higher qualifications for teachers. Perhaps the service areas in the profession that continue the use of instructors with limited teacher training must recognize that effective vocational instruction demands both technical skills and pedagogical ones. Neither is sufficient by itself. A Nation at Risk, Action for Excellence, and High School all stand united on the need for higher levels of performance in teacher education. Can our universities deliver this?

The reports also imply something else. In order to achieve what is called for, increased cooperation between state departments of vocational education and university departments of vocational-technical education will be necessary. Neither is independent of the other, and it will take a more intensive collaborative effort in the future to meet the imperatives facing us.

OTHER IMPLICATIONS

The reports contain a number of other implications for vocational education. For example, the need to address work attitudes and related effective objectives was raised strongly in the Paidiea Proposal, High School, and Education for Tomorrow's Jobs. In fact, High School calls for an entire course, required for all, focused on work attitudes. Vocational educators in all service areas already know how important such goals are to success in the world of work. What remains, however, is to develop a more effective means of accomplishing this objective—a job made more difficult by the relatively low levels of concern for others displayed by our "me first" society.

Perhaps the increased levels of private sector involvement advocated by Action for Excellence, High School, and Education for Tomorrow's Jobs will provide us with increased opportunities for addressing these goals. But are we serious about private sector participation in vocational education? Could vocational education handle the pressure of an actively involved and effective presence on all fronts?

The reciprocal question should also be asked. Will the private sector participate on a widespread basis and do so in a non-selfish manner that recognizes such participation as a public trust? Perhaps vocational education should work actively to encourage the passage of a National Industry Responsibility Act that would require industry to participate in vocational education. The premise being, of course, that since our nation's human resources make industry's profits possible, it becomes industry's responsibility to share its human resources with vocational education.

One way to make use of private sector talent would be to assist in the development of improved curricula and instructional materials as desired by A Nation at Risk and Action for Excellence. Such input certainly would be welcomed by

vocational educators, but we would have to convince industry that this would not infringe on proprietary information or affect the competitiveness of individual industries.

While interacting with the private sector, vocational educators should also seek the development of new tests, competency measures, and criterion levels for establishing the high standards the reports recommend. Similarly, increased participation in cooperative education and work experience programs would be a constructive use of joint educational and private sector resources. Nor are co-op stations, tests, and curricula all that industry could contribute. Educating Americans for the 21st Century, for example, asked that a national film center presumably for math, science, and technological films--be funded as a means for improving the quality of instruction. Because of their contacts and their practical knowledge, vocational educators are well suited to developing instructional materials in concert with industry. Certainly the track record of our state and regional curriculum centers is exemplary evidence of this. But on a state-by-state, school-by-school, or even program-by-program basis can vocational education perform effectively?

Vocational educators also must be able to use new technology to raise their instructional effectiveness to the levels demanded. Goodlad, in A Place Called School, points out the promise of moving in this direction. We need to build our skills in developing and using instructional software for microcomputers. We need to make more use of videotapes, interactive instruction, slides, simulators, and the other products of technology. Contemporary vocational education cannot be delivered successfully via the traditional "show and tell" mode--at least not in an efficient manner.

SUMMARY

There are clearly more implications in these reports than the vocational education profession can address--at least in terms of the existing resource base. But then increasing the latter was one of the objectives behind many of the reports.

To increase the resource base, the vocational education profession needs a stronger and more unified voice. It also needs to work in concert with other professional groups. Similarly, we need more of our colleagues in education, and certainly more of the decision-makers in business, industry, labor, and government, to recognize the imperative of a national thrust toward educational excellence that encompasses vocational education. Our participation as full members of the educational community is critical if our nation harbors any hope meeting the challenge of technology.

Perhaps one of the saddest things possible is to have someone with potential sitting on the bench of life . . . overlooked . . . unrealized, while less capable others are players on the field. Let us, by our example, insight, and courage to initiate, demonstrate what vocational education is . . . and what it can be!

SECONDARY VOCATIONAL EDUCATION AND THE NATIONAL STUDIES

Implications for Learning and Instruction

by Dora B. Johnson

Volumes are being written about education. Private foundations, federal commissions, public groups and professional organizations are clamoring for higher standards, more rigorous accountability, higher quality in our public schools. Certain aspects of education, however, are being slighted or ignored, creating glaring gaps in the many frameworks for improvement. The most noticable and disturbing gap is a reluctance to come to grips with the actual processes of teaching and learning.

Harold Howe II, former Commissioner of Education, most appropriately described this gap when he stated that "many reports give the feeling that students are mere receptacles into which information and skills can be dumped....The psychological assumption that seems to underlie many recommendations is that the mind is like a muscle that can be improved by strenuous exercise. This view of learning has long been discredited, and it won't do any good to revive it in the name of rigor or economic productivity or national security."[1]

The focus of this paper will be to examine the gap in instruction and learning found in the current writings on education. It will explore four major areas: learning styles, content, the teaching process and outside-school experiences. Each of these sections will be related to vocational education and recommend some ways for vocational educators to eliminate this gap between content and the student.

LEARNING STYLES

What are learning styles? As described in educational literature, learning styles "emerge from inborn, natural inclinations"[2] and are "characteristic cognitive, affective, and psychological behaviors that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment."[3] The learning system includes distinctive and observable behaviors that "tell" the teachers how the students' minds relate to the world and therefore, how they learn. "These characteristic sets reflect specific mind-qualities that persist even though goals and content may change."[4]

Therefore, the student's learning style is not something the student changes to match the teacher. Each individual's style is a natural part of personality just as his/her ability in school subjects, sports, language aptitude or artistic ability is something which may be adapted but basically not entirely changed.

Also, learning styles do not change as students move from one subject to another. Students who learn best using one style in mathematics will use the same style in English, history, communications, home economics, electronics, horticulture or welding.

A third important point is that these preferences for the learning process can be observed and measured. It is possible for teachers to use information about the learning preferences of their students to adjust their instruction. Learning styles must be a consideration when exploring methods of revising educational programs to meet the new directives being identified in the current writings.

CONTENT

One of the major themes of the current literature on education is the need for content reform. Several of the documents outline content that will prepare students for the society they live in and provide the skills they will need to succeed in further education or the workplace. Educating Americans for the 21st Century lists outcomes for a number of science subjects by elementary and secondary levels; Action for Excellence indicates competencies by categories; and A Place Called School outlines various goals for schooling.

The need for development of higher order skills is also addressed. Action for Excellence indicates that education faces two imperatives, the upgrading of our definition of skills and their expansion to include more of the skills that will be demanded in a technologically sophisticated workplace. Educating Americans for the 21st Century has defined a hierarchy of content for all levels of education with higher order skills offered at the high school levels. (p.43).

Futurist Marvin Cetron, in considering the changes in the health care industry, says that people also must be equipped for change. Cetron states that as important as math, science and vocational skills are, they are not enough. The higher levels of cognitive skills such as decision-making, problem-solving, creativity, communications, critical thinking, evaluation, analysis, and synthesis, must be learned as early as possible.[5]

According to Goodlad in A Place Called School, however, customary teaching procedures rarely provide opportunities for students to practice the full range of learning behaviors implied in the goals for education. Students are far more proficient in regurgitating facts and performing at the lower levels of cognition than in solving problems.

If the content of public school education is to specify more distinctly the outcomes from schooling, and develop more advanced skills, what changes in the teaching process are necessary?

THE TEACHING PROCESS

Each of the documents examines the teaching process from slightly different perspectives. A Nation at Risk recommends specific time, content and homework considerations as the method to improve the nation's education. "Persons preparing to teach," it says, "should be required to meet high education standards, to demonstrate an aptitude for teaching and to demonstrate competence in an academic discipline" (p.30). This author finds it interesting that "competence"

in the discipline is required but only an "aptitude" for teaching is necessary.

There are human relationships, points out Ernest L. Boyer in High School, that still work--command of the material to be taught, enthusiasm for the work, optimism, and human sensitivity. "When we remember a great teacher," he says, "most often we remember a person whose technical skills were matched by the qualities we associate with a good and trusted friend."

Educating Americans for the 21st Century also documents the need for excellence in instruction when it states that characteristics will include a vertical emphasis with early hands-on experience, disciplined and rigorous study, and a substantial amount of time on task and home work.

Mortimer Adler in the Paideia Proposal indicates his concern for learning processes when he states that "all genuine learning is active, not passive. It involves the use of the mind, not just the memory. It is a process of discovery, in which the student is the main agent, not the teacher."

In strengthening the curriculum, "courses in not only math and science, but in all disciplines, must be enlivened and improved," states Action for Excellence. "The goal should be both richer substance and greater motivational power; to eliminate soft, non-essential courses, to involve students more enthusiastically in learning; and to encourage mastery of skills beyond the basics--problem-solving, analysis, interpretation and persuasive writing, for example."

Generally, the current literature on education strongly suggests that students are a very important variable in any changes in the basic education program. They need instruction that is varied, enthusistically delivered, involving and challenging, with outcomes that are defined, documented and achievable.

LEARNING STYLES AND VOCATIONAL EDUCATION

A Place Called School by John I. Goodlad provides more data on vocational education than any of the other studies because the research group actually spent time in vocational programs.

Academic subjects, Goodlad observed, avoid the hands-on, learning-by-doing approach so vital to vocational education. The result is not "two kinds of instructional activities in each class appealing to alternative modes of learning, but two curricular divisions in secondary schools."

Though vocational classes still depend on the traditionally academic techniques of lecturing and questioning, they tend to use more individual teacher/student interaction than academic classes.

"Teachers in vocational education," says Goodlad, "lecture less and demonstrate more; encourage their students a little more to participate in selecting learning activities; engage students more actively in physical doing and performing; and give fewer written quizzes."

Vocational educators should feel some sense of pride in having their instruction described in such positive terms. The instructional activities used in vocational education are those that students enjoy and that many consider good instruction.

It would seem reasonable, then, that the recommendations and conclusions of the other studies would use instructional activities in vocational education as a model for other subjects. Surprisingly, however, the majority of the studies did not even address the instructional process in their concluding sections. For those that did, the relevance of the instruction found in the vocational classroom was overshadowed by other recommendations regarding vocational education, such as equipment, general work skills, etc.

COLLABORATIVE WORK EXPERIENCE

In almost every case, the documents reviewing education and the need for change indicate a need for a closer tie with the private sector. High School uses the term "connection," Action for Excellence talks about "partnership," Education for Tomorrow's Jobs uses "collaboration." Included are suggestions relating to the instructional techniques of placing students in a real work situation. It's a strategy that has long been a part of vocational education, under such titles as cooperative education, cooperative work-experience, apprenticeships, and clinical experience.

Not only has the education community identified the need for closer connections with business and industry, but so has the business community as well. In People and Productivity: A Challenge to Corporate America, the New York Stock Exchange challenged business to open its doors to work-study programs with nearby high schools and colleges and to revive the apprenticeship system.[6]

Even as states raise the graduation requirements for high school they are also recognizing the value of cooperative education and business programs. For example, Virginia has raised its requirements to a full day except where students are engaged in cooperative work study.[7]

The question of quality in such cooperative programs must also be considered. Education for Tomorrow's Jobs states: "The best programs with work-experience components are ones in which completion is determined on the basis of mastery of certain knowledge and skills, not simply on the passage of time. There must be clearly stated objectives before students enroll."

It is here — a closer connection between education and business —that vocational programs have more to offer the educational community. Vocational education is involved in working with business through its advisory committees and in placing, coordinating and supervising students placed in actual work situations.

CONCLUSIONS AND SUGGESTIONS

Clearly, students have different methods of internalizing material presented in the classroom and perceptive teachers structure their instruction accordingly. The need for many students to learn through hands-on methods is well defined. The vocational community, however, either does not have the research necessary to document this need or is not using the information to support vocational education's case for providing a very real service to all who require this approach. A national effort to document the learning styles within vocational programs needs to be undertaken. This effort must include all vocational areas and, therefore, it seems reasonable for the American Vocational Association to take the lead in such an effort. Such an effort, however, must be broadly based in educational research.

Many of the recent reports have also recommended curriculum revision and have made suggestions on the content to be included in the revised curriculum. A major thread connecting most of the recommendations is the need for the development of higher order skills within each subject or unit. These include such skills as problem-solving, evaluation and critical thinking.

Vocational teachers are accustomed to creating learning experiences that require students to apply learning in more advanced situations. The ability to trouble-shoot a malfunctioning carburetor is certainly a problem-solving situation, as is planning for the care of a nursing home patient with unique physical restrictions. The difficulty is that achievement of these higher order skills has not been communicated to the general school community.

Each program should examine its curriculum and determine if the current outcomes are the highest level of attainment needed for the occupations being prepared for. If not, then additional objectives at higher levels of attainment need to be developed, communicated to the students and tested. Vocational programs must be concerned with excellence, not only in the manipulative skills, but also in the cognitive knowledge necessary for a technological society.

This ability of vocational programs to achieve these proposed skills must be documented at the state and national level. Vocational educators must be able to show where within specific vocational programs the general science skills identified by the National Science Foundation can be developed; in an electronics programs, where the physics competencies are being achieved, or in the business education programs where the writing competencies are being taught.

Even though many advocated teaching approaches are widely practiced in vocational education, none of the recommendations has specifically suggested the integration of these techniques into other classrooms.

It seems that — given the choice between the need to define content and the harder task of defining the instructional atmosphere essential for learning that content — the studies invariably chose the earlier task in the hopes that the instructional process would evolve naturally.

Vocational educators must demand that excellence in instruction be given as nigh a priority as excellence in subject matter. To achieve this it is necessary that the hands-on, experiential, tactile instructional strategy be examined, written about and researched as a very real alternative to abstract, academic learning.

Finally, many studies advocate stronger ties between education and the private sector, usually in the form of work study programs. As was indicated, the programs being suggested have been for many years a part of numerous vocational subject areas. This area may be one in which vocational education can have the greatest impact upon all of public education.

These programs should include strongly defined outcomes, supervision on site, coordination by school personnel who have been uniquely trained for this process, periodic and final evaluation of student outcome, evaluation of site for educational environment, and a plan for short-and-long-range outcomes from the experience.

Certainly a national group representative of all vocational areas, along with business and education, could generate the guidelines for excellence in such processes. Above all, it must be viewed as an instructional process that can be integrated into all programs — vocational or otherwise -- that would provide this experience for their students.

A FINAL COMMENT

One of the things vocational educators must accept is that change is necessary for programs to continue to be offered in comprehensive high schools and other secondary institutions. We have a great deal to offer to other educators in instructional approach and working with business and industry. We are accustomed to being concerned with higher order skills of application, and problem solving. We are accustomed to assessing our programs through the advisory committee function of curriculum evaluation. As Henry David wrote in ending his report . . . "a powerful stimulus for redirection and reform of vocational education in the comprehensive high school, not yet adequately used, lies in making a habit of periodic assessment of every aspect of the enterprise that bears upon performance ranging from local and state planning through to the availability of resources and their use, to the competencies acquired by students, to classroom procedures and methods of instruction."[8]

We must recognize our involvement with the total educational community and our uniqueness within it. We can no longer encourage isolation from other public education, but we must identify where vocational education can assist and where we must remain firm in our need to be different. Among the most important areas we can influence are instruction and learning. First, however, we must do some proactive planning. Then we must make some changes.

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